

COMPONENTS

FAQ

Q What's the new Intel Wolfdale processor, and should I wait for it?

A Wolfdale is the codename for the next-generation Core 2 Duo desktop PC processors. They will use 45nm architecture, which means they will be faster than existing Core 2 Duos at the same clock speed. They will have 6MB of Level 2 cache shared between the cores, compared to the 4MB of current Core 2 Duos.

Wolfdale has 47 new SSE instructions, improving performance in graphics applications and games. It should be faster to switch between virtual machines, which let you run different operating systems at once.

There will be both quad-core (Yorkfield) and dual-core (Wolfdale) versions, and they will support the latest DDR3 memory and a 1,333MHz FSB. They are worth waiting a couple of months for.

Jim Martin

Reviews Editor



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ASUS P5KC

★★★★★

£79 inc VAT
From www.dabs.com

DDR3 memory is widely available, but it's still very expensive compared to DDR2. You can expect to pay around £250 for 2GB, which is why we didn't include it in our memory Labs on page 110. If you're building a new PC, this could leave you with a problem. You may not want to buy DDR3 because of the price, but you'll want to use it in future to get the best performance possible.

Thankfully, Asus has an answer to the problem: the P5KC motherboard. It has four slots for DDR2 and two for DDR3 memory. This means you can keep your current DDR2 memory for the time being and upgrade to DDR3 when prices become more reasonable. You can't mix and match the two, though.

The motherboard is based around the excellent Intel P35 chipset, with support for the current generation of Intel Core 2 Duo and Quad processors, including those with 1,033MHz frontside buses (FSBs), as well as the upcoming 45nm designs, codenamed Wolfdale (see FAQ, left). The BIOS is well equipped for overclocking, as you can adjust the FSB from 200MHz to 800MHz in 1MHz steps. There's a wide range of memory speed settings, as well as comprehensive voltage tweaking, too. All are essential features considering the P5KC is aimed at enthusiasts on a budget.

There are no fans, as we've come to expect from modern motherboards. Instead, three small passive heatsinks are fitted, which makes for silent running. Although two of the heatsinks are very close to the processor socket, you should be able to install almost any cooler.

There's a good collection of ports on the backplate, including six USB2 ports. There are also headers for



another six on the motherboard, though no brackets are supplied to connect to these. Only one PS/2 port is provided for a keyboard, so you must use a USB mouse. Eight-channel analogue audio outputs and optical and coaxial S/PDIFs are present. There's also a FireWire port and Gigabit Ethernet as well as eSATA for adding an external hard disk.

There are five more SATA ports for internal disks. One uses the same controller as the eSATA port and these two can be made into a RAID array: 0, 1 or JBOD. The other four ports are part of the Intel ICH9 chipset, which doesn't have RAID support. The two PCI Express x16 slots support ATI CrossFire graphics cards, although the second slot runs at a quarter of the speed of the main slot. There are three PCI slots as well as a single PCI Express x1 slot.

Using our standard test setup, the P5KC scored 149 overall in our benchmarks, which is about average for a P35-based motherboard. We re-ran the tests with 2GB of DDR2 and 2GB of DDR3 RAM for comparison. The DDR3 was only marginally faster and certainly not worth the extra money unless you plan on using its higher 1,066MHz speeds for overclocking purposes.

This is a well-equipped motherboard with a good range of ports at a reasonable price. The provision of DDR3 slots means it's as future-proof as possible.

Seth Barton

SUMMARY

- ✓ DDR2 and DDR3 support
- ✓ Lots of ports
- ✗ Poor RAID support

INTEL MOTHERBOARD Intel P35 chipset, supports Socket LGA775 processors, 3x PCI, 1x PCI-E x1, 2x PCI-E x16, 4x DDR2 DIMM slots, 2x DDR3 DIMM slots, Gigabit Ethernet, 6x USB2, FireWire, eSATA
PART CODE P5KC
DETAILS <http://uk.asus.com>

PERFORMANCE (see page 66)



Also consider...

INTEL Core 2 Duo E6750

★★★★★

£115 inc VAT
From www.shop.bt.com



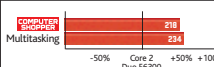
BEST BUY Intel's latest Core 2 Duo processor has a faster FSB speed

of 1,333MHz, so there's more bandwidth available to talk to system components, although you need a motherboard that supports this speed. It's incredibly quick, but also very cheap. If you're looking to build a new PC and want a lightning-fast processor, this is the one to buy.

PROCESSOR Two cores running at 2.66GHz, LGA775, 333MHz external bus (1,333MHz quad-pumped FSB), 4MB L2 cache
PART CODE BX80557E6750
DETAILS www.intel.com

- ✓ Incredible value; amazing performance
- ✗ Needs a new motherboard

FULL REVIEW Oct 2007



SAPPHIRE X1950 Pro

★★★★★

£81 inc VAT
From www.kikatek.com



PRICE CUT! The X1950 Pro is an excellent card. It blasted through

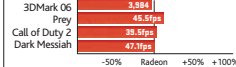
all our games tests at high detail and resolution settings. It doesn't support DirectX 10, but there probably won't be many games that require this over the next year. This graphics card is also available as an AGP version for about the same price. For those on a budget, this is the card to buy.



GRAPHICS CARD ATI Radeon X1950 Pro chipset, PCI-E x16 interface, 570MHz core speed, 36 pixel pipelines, 256MB GDDR3 memory running at 700MHz (1.4GHz effective)
PART CODE 11095-01-20R
DETAILS www.sapphiretech.com

- ✓ Fast in DirectX 9 games; good value
- ✗ Doesn't support DirectX 10

FULL REVIEW Oct 2007



COOLER MASTER Cosmos 1000

★★★★★

£133 inc VAT
From www.dabs.com

Whether you are building a new PC from scratch or you just want a new case for your existing components, you should consider the Cosmos 1000. The price may seem high considering it doesn't come with a power supply, but this is one of the highest-quality cases around.

If you don't believe us, consider the weight. The thick aluminium and steel panels weigh 17kg with nothing inside. Its sheer size contributes to the weight, and that's good news if you want to install a wider than average motherboard and dual graphics cards.

Behind the aluminium door at the front are five 5¼in drive bays, and there's an adaptor to convert one to a 3½in bay. There are buttons to lock and release the drives, so no tools are needed. Below are six aluminium slide-out hard disk trays.

At the rear is a 120mm fan, and there are two more at the top to ensure hot air is expelled. A power supply can be mounted at the bottom, and in front of it is a fourth 120mm fan, which has an adjustable vent so you can direct the airflow where you like. Oddly,



there's no fan for the hard disks; it's an optional extra that takes up the lower two 5¼in bays when fitted, so it's not a great design. Unlike the Antec cases we've seen, the Cosmos 1000 relies on your motherboard to control fan speed.

Most modern motherboards can adjust speed based on temperature, and all the fans ran quietly at 35°C. The side panels are double-skinned and have dense foam padding, which further deadens sound and vibrations.

With a good range of ports at the front, including four USB2 and an eSATA interface, this is a great case. With better thought-out hard disk cooling, it would be almost perfect.

Jim Martin

SUMMARY

- ✓ Excellent build quality
- ✓ Plenty of room inside
- ✗ No standard hard disk cooling

ATX CASE 5x 5¼in bays, 6x 3½in bays (internal), 4x USB2, FireWire, eSATA, audio in, audio out
PART CODE RC-1000-KSN1
DETAILS www.coolermaster.co.uk

SAPPHIRE HD 2600 Pro

★★★

£62 inc VAT
From www.scan.co.uk

If your PC doesn't have a PCI-E graphics card slot, the choice of new AGP cards is limited. Sapphire's new HD 2600 Pro is based around ATI's Radeon processor of the same name and has an AGP 8x interface.

The card has similar specifications to a PCI-E HD 2600 Pro, with a core clock speed of 600MHz and an effective memory speed of 1GHz. It comes with 512MB of DDR2 RAM, which allows it to handle high-quality textures such as those in our punishing Call of Duty 2 test.

There are DVI and D-sub outputs, plus a TV-out connector that can be used with the adaptors for component, S-video or composite video. You also get a DVI-to-D-sub adaptor. The card needs a floppy drive-style power connection from your PC's power supply.

There are some limitations. There's no HDMI output and, while you can buy a DVI-to-HDMI adaptor, no audio will be transmitted. There's also no current support for DirectX 10. AMD has said it will introduce this via a driver update in the



near future. For now, this is in effect a DirectX 9 card. The card has ATI's Unified Video Decoder, which might appeal to anyone wishing to take the load off their processor when decoding HD video, such as H.264. Other bonuses if video is a priority are Avivo HD (to enhance video quality) and a near-silent cooling fan.

Gaming performance isn't fantastic. The HD 2600 Pro managed only 13.8fps in Call of Duty 2 and 18.2fps in Prey. In 3DMark06, it scored 2,957. To obtain a playable frame rate of 27fps in Call of Duty 2, we had to turn off anti-aliasing and anisotropic filtering.

This is a good choice if you want to watch HD video on a media centre PC, but gamers are better off choosing Sapphire's AGP Radeon X1950 Pro (see *Shopper* April 2007), which is faster and costs just £30 more.

Jim Martin

SUMMARY

- ✓ Ideal as a Media Center card
- ✗ Poor gaming performance
- ✗ No DirectX 10 support

AGP GRAPHICS CARD ATI Radeon HD 2600 Pro, 8x AGP interface, 512MB DDR2 memory running at 500MHz (1GHz effective), 600MHz core speed, DVI, D-sub, TV-out
PART CODE 11115-01-20R
DETAILS www.sapphiretech.com

PERFORMANCE (see page 66)



CHOOSING A... Processor

Follow the steps to find your ideal specs

MANUFACTURER: Intel
PROCESSOR: Pentium Dual Core E2140
SOCKET: LGA775

Recommended minimum in grey

1 A processor with the minimum specifications above costs around £45. It's reasonably fast, but is best suited to standard office applications. As it uses the established LGA775 interface you may not need a new motherboard to match, but check whether your particular board supports a dual-core Pentium.

2 If you're upgrading only your processor, you'll be limited by your motherboard's socket type. AMD Socket 754 boards provide the least choice; an Athlon 64 3400+ is the fastest compatible processor. Socket 939 motherboards provide more options, including dual-core X2 processors going up to the fast FX-60. Socket AM2 is the latest standard and supports AMD's full range.

Intel's LGA775 socket has been around for a few years, but check your motherboard's manual for processor support as only the latest chipsets support Intel's Core 2 Duo and Core 2 Quad processors.

3 If you're building a PC from scratch, it's best to pick the processor first and choose a motherboard to match. If you're building a basic office PC, a budget dual-core processor is fine. If you do a lot of intensive tasks, an Intel Core 2 Duo or Quad is a better choice.

The Core 2 Duo range is our current favourite. The good news is that a recent price drop means you can buy the very quick E6750 (see 'Also consider...', left) for just £115. If your motherboard doesn't support Core 2 Duo, it's worth upgrading as the Pentium D range of dual-core processors is no longer available. Avoid single-core Pentium 4s and Athlon 64s as they aren't good value.

4 Want to overclock? Intel's Extreme processors and AMD's FX processors are multiplier-unlocked, so you can adjust their speeds without affecting your memory or other components. However, the Core 2 Extreme X6800 costs around £650.

5 You can buy Intel's mobile Core 2 Duo and Core Duo processors, too. However, you'll need a motherboard or barebones PC that's compatible with Socket 479. Mobile processors are more expensive, so buy one only if you need to.